

**Claims**

1. Method for operating a dynamic range power control of an audio signal, with an adaptive threshold, wherein said dynamic range control comprises an audio signal input, an audio signal output and a power control comprising:
  - receiving at least two thresholds comprising a maximum power level for short time interval operation and a maximum power level for long time operation of an electro acoustic transducer,
  - detecting the power of the audio signal input continuously,
  - short term controlling the power of the audio signal output in a way that the power of the output is reduced to said maximum power level for short time operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation, and
  - long term controlling the power of the audio signal output in a way that the power of the output signal is reduced to said maximum power level for long time operation, if the detected power of said audio signal input is exceeding said maximum power level for long time operation, for a predetermined time period, wherein said long term control overrides said short term control.
2. Method according to claim 1, characterized in that the speed said long term controlling of the power of the signal is performed depending from the difference power between said detected input signal and said maximum power level for long time operation.
3. Method according to any of the preceding claims, characterized in that said thresholds are received from said electro acoustic transducer.
4. Method according to any of the preceding claims, characterized in that said long term control comprises a smooth reduction of said output power level.
5. Method according to any of the preceding claims, characterized in that said long term control comprises a time interval controlled smooth reduction of said output power level.
6. Method according to any of the preceding claims, characterized in that said short term control comprises an immediate reduction of said output power level.
7. Method according to any of the preceding claims, wherein said power control comprises a

digital power control having a digital control range and an analog power control having an analog power control range, characterized in that said signal volume is controlled analogously at signal levels lower than the control range of said analog control, and in that said signal power is controlled digitally at signal levels higher than the control range of said digital control, wherein the power control ranges of said analog and digital controls are not overlapping.

- 5        8. Computer program product comprising program code means stored on a computer readable medium for carrying out the method of anyone of claims 1 to 7, when said program product is run on an electronic audio device.
- 10      9. Computer program product comprising program code, downloadable from a server for carrying out the method of anyone of claims 1 to 7, when said program product is run on an electronic audio device.
- 15      10. Computer data signal embodied in a carrier wave and representing a program that instructs a computer to perform the steps of the method of anyone of claims 1 to 7.
- 20      11. Dynamic range controller with an adaptive threshold comprising:
  - an audio signal input,
  - an audio signal output,
  - means to continuously detect the power of the audio signal and
  - a power controller, said dynamic range control being characterized by:
  - means to receive at least two thresholds comprising a maximum power level for short time interval operation and a maximum power level for long time operation of an electro acoustic transducer,wherein said dynamic range controller is configured to short term control the power of the audio signal output in a way that the power of the output is reduced to said maximum power level for short time operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation, and  
30      is configured to long term control the power of the audio signal output in a way that the power of the output signal is reduced to said maximum power level for long time operation, if the detected power of said audio signal input is exceeding said maximum power level for long time operation for a predetermined time period, wherein said long term control overrides said short term control.
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12. Dynamic range control according to claim 11, further comprising a soft switch to slowly control the power of the signal in a way that the power of the output signal substantially equals said maximum power level.
- 5    13. Dynamic range control according to claim 11 or 12, further comprising a timer element to operate said long term control in a timer controlled way.
- 10    14. Electronic audio device comprising an audio signal source and an audio output characterized by a dynamic range controller with an adaptive threshold according to anyone of claims 11 to 13.
- 15    15. Electronic audio device according to claim 14, characterized in that said audio source is a digital audio signal source and said audio output is an analog audio output.
16. Electronic audio device according to claim 14, or 15 wherein the means to receive at least two thresholds comprised in the dynamic range control with an adaptive threshold is implemented by an integrated circuit implemented in a connector of said electro acoustic transducer.